

(9) CLAIMS

1. An electronic stylus apparatus comprising:

a portable power source;

connected to the power source, at least one electrode for producing a localized,

eminating, electric field wherein the field is of a strength sufficient to reorient electronic

picture elements formed of an electrically bistable colorant.

2. The apparatus as set forth in claim 1 comprising:

connected between said power source and said electrode electronic circuitry for switching the polarity of said electric field.

3. The apparatus as set forth in claim 1 comprising:

connected between said power source and said electrode electronic circuitry for selectively varying the intensity of said electric field.

4. The apparatus as set forth in claim 1 comprising:

said at least one electrode is adapted for writing and erasing electrically bistable, bichromal, molecular colorant.

5. The apparatus as set forth in claim 1 comprising:

a hand-held cylindrical pencil shaped body wherein said power source and

electrode are incorporated therein such that said apparatus is used in the manner of a conventional writing instrument.

6. The apparatus as set forth in claim 1 comprising:

electronic circuitry for maintaining a substantially constant electronic field output  
5 of the apparatus.

7. A method for electronic erasable writing, the method comprising:

providing a surface having picture elements defined by a bistable, bichromal, colorant elements; and

moving a portable, perpendicular electrical fringe field, tuned to changing  
10 orientation of the colorant elements, across said surface in a manner substantially identical to conventional handwriting.

8. The method as set forth in claim 7 comprising:

providing a writing-erasing instrument for producing said perpendicular fringe field such that said field is localized to emanating from a tip of said instrument.

15 9. The method as set forth in claim 7 comprising:

switching polarity of said perpendicular fringe field from a first polarity for writing operations to a second polarity for erasing operations.

10. The method as set forth in claim 7 wherein the strength of the perpendicular fringe field is tunable such that the marking pixel width and erasing pixel width of said tip is adjustable.

11. The method as set forth in claim 7 wherein providing said surface includes using  
5 bistable, bichromal, molecular colorant.

12. An erasable writing system comprising:  
an electronically writable-erasable surface having a layer of bistable, bichromal,  
colorant thereon; and  
a portable, electronic stylus adapted for writing and erasing said colorant.

10 13. The system as set forth in claim 12, said colorant comprising:  
a molecular system, said system including electrochromic, switchable molecules,  
each of said molecules being selectively switchable between at least two optically  
distinguishable states, wherein said system is distributable on the substrate thereby  
forming an erasably writable surface.

15 14. The system as set forth in claim 13 comprising:  
said molecules exhibit an electric field induced band gap change.

15. The system as set forth in claim 14 comprising:

said electric field induced band gap change occurs via a mechanism selected from a group including (1) molecular conformation change or an isomerization, (2) change of extended conjugation via chemical bonding change to change the band gap,  
5 and (3) molecular folding or stretching.